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Lipsitz & McAllister, LLC
755 MAIN STREET
MONROE, CT 06468

EXAMINER	
CHOW, CHIH CHING	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/023,389	Applicant(s) MONZ ET AL.	
	Examiner Chih-Ching Chow	Art Unit 2191	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/14/01*.

4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to amendment dated February 21, 2006.

2. Per Applicants' request, independent claims 1, and 36 have been amended.

3. Claims 1-71 remain pending.

4. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/02/2005 has been entered.

Response to Arguments

5. Applicant's arguments with respect to claims 1-71 have been considered but are moot in view of the new ground(s) of rejection necessitated by Applicant's amendments to the claims. The Applicant has failed to address the feature of displaying plural virtual operating units that was taught by the prior art of record, Iriguchi, which has listed in the Office Action dated 09/29/2005. The examiner is maintaining the 35 USC § 103 rejections (claims include the amendments) herein below.

6. In regard to the Remarks dated 2/21/06, pages 13-14, during the 11/27/2005 telephone interview, the attorney mentioned that the feature will be amended is 'two operating units interacting with each other on the display', which is not cited in the current amendment of independent claims 1 and claim 36.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill

in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-6, 8-12, 18-41, 43-47, 52-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,315,523 by Naoki Fujita et al. (hereinafter "Fujita"), in view of U. S. Patent No. 6,047,225 by Iriguchi et al. (hereinafter "Iriguchi"), and further in view of U.S. Patent No. 6,553,268 by Marvin J. Schwenke et al. (hereinafter "Schwenke").

CLAIM	**Fujita / Iriguchi / Schwenke**
1. A method for generating a control program for a machine tool, said machine tool having at least one sequence of sets control data for the machining of a workpiece by means of operating units controlled by the control program, comprising: a. providing a machine display for presenting a visualization of a virtual workpiece and at least two virtual operating units to a user by a data processing unit, each of said virtual operating units corresponding to an operating unit of said machine tool,	Fujita teaches a control program for a machine tool in a prior art. In Fujita, column 1, lines 52-57, "the present invention provides a **numerical control apparatus** (*control program, virtual operating units*) having a work simulation function capable of **displaying** (*can be visualized*) both the **workpiece configuration change** and the **tool** (*machine tool*) **shift movement** on the same **display screen** (*item a, represented to a user*) in accordance with the execution of a numerical **control program**", further, see bottom of column 2 to top of column 3, "The non-volatile memory 14 stores **data** to be reserved even after an electric power is turned off. For example, the **data** (sets of control data) includes various parameters, tool correction amounts, pitch error correction amounts, and predetermined scales used in the scale determining process."
b. addressing at least one of said virtual operating units by the user to specify virtual action(s) via a data input unit and visualizing said at least two virtual operating units and said specified virtual actions) of said at least one virtual operating unit on said machine display, and	For item b, see column 3, lines 5-8, "the CNC apparatus includes a **manual data input apparatus** 15. The data input apparatus 15 comprises a keyboard 16 having symbolic keys and numerical keys etc. for manually inputting various commands, drawing data, NC data and so on". Fujita teaches all aspect of item

b, but he has not mentioned 'visualizing at least two virtual operating units' specifically, however, Iriguchi teaches it in an analogous prior art, see Iriguchi's FIG. 2A, 7A and 9A, wherein a plurality of virtual operating units are displayed, see column 1, lines 45-50, "a machining unit preparing section for **preparing plural machining units** with unified information of a machining area represented by a three-dimensional solid model".

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Fujita's disclosure of the control program for machining a workpiece by displaying at least two operating units taught by Iriguchi, for the purpose to working on plural machining units at the same time (Iriguchi, column 2, lines 1-5).

c. converting the action(s) specified to said at least one virtual operating unit into sets control data of the control program by the data processing unit taking into account a machine configuration and control configuration specified to said machine tool.

For item c, see Fujita, column 2, lines 44-46, "an auto-programming function for **automatically** programming an NC program in the form of an interactive communication with an operator (*action specified for each individual*)", and column 3, lines 65-68, "ROM 32 **storing a program** for the auto-programming operation and data for generating an interactive data input screen, an SRAM 33 for temporarily **memorizing** various data, and a **non-volatile memory** 34 storing tool data, workpiece configuration data etc" (*data converting and storing*). Fujita teaches all aspects of claim 1, but he does not mention 'display at least two virtual operating units' specifically, however, Schwenke teaches it in an analogous prior art, see Schwenke's FIG. 7A, where different operating units are introduced.

It would have been obvious to a person of

	ordinary skill in the art at the time of the invention was made to supplement Fujita's disclosure of the control program for machining a workpiece and displaying multiple virtual operating units taught by Iriguchi, by using at least two operating units taught by Schwenke, for the purpose to identify the interrelationships of a machine and control configuration (Schwenke, column 5, lines 17-19).
2. A method as defined in claim 1, wherein all of the virtual operating units of the machine tool are presented to the user in accordance with an actual machine configuration in on said machine display.	For the feature of claim 1 see claim 1 rejection. See claim 1 rejection about the displaying workpiece part, and see column 3, lines 19-22, "Under the **display screen** 18a, there is provided a plurality of soft keys (*represented to the user*). Each soft key is assigned a different functions so that it can be used **selectively** *(selectable)* depending on the operational modes of the CNC apparatus."
3. A method as defined in claim 2, wherein all of the virtual operating units and their virtual actions are represented, taking into account the machine and control configuration of the machine tool.	For the feature of claim 2 see claim 2 rejection. For the rest of claim 3 feature see claim 1 and claim 2 rejections.
4. A method defined in claim 1, wherein the virtual operating units and their virtual actions are represented for the user after they have been addressed and specified.	For the feature of claim 1 see claim 1 rejection. For the rest of claim 4 feature see claim 2 rejection.
5. A method as defined in claim 1, wherein a linking of virtual operating units specified in a defined manner is carried out automatically by the data processing unit in order to take into account the machine and control configuration.	For the feature of claim 1 see claim 1 rejection. For the rest of claim 5 feature, see Fujita column 3, lines 56-61, "The CNC apparatus is **connected** (*linking*) through an interface 24 to external devices such as a paper tape reader, a paper tape puncher, a printer, a floppy disk drive unit (*all are defined manners*) etc. (not shown),

	so that the work program can be read from the paper tape reader to the CNC apparatus and an edited work program (*read and stored*) can be outputted from the CNC apparatus to the paper tape puncher."
6. A method as defined in claim 1, wherein the machine and control configuration is taken into account with the aid of a machine model comprising information concerning linkings of the virtual operating units representing the machine and control configuration.	For the feature of claim 1 see claim 1 rejection. For the rest of claim 6 feature see claim 5 rejection.
8. A method as defined in claim 6, wherein the machine model is generated by means stored linking information.	For the feature of claim 6 see claim 6 rejection. See claim 1 and 5 rejections.
9. A method as defined in claim 6, wherein the machine model linking the individual, virtual operating units of the machine tool in accordance with the machine and control configuration is stored in the data processing unit.	For the feature of claim 6 see claim 6 rejection. For the rest of claim 9 see claim 1 and claim 5 rejections, also see Fujita's FIG. 1.
10. A method as defined in claim 6, wherein the machine model is utilized in the data processing unit in the form of a data tree structure.	For the feature of claim 6 see claim 6 rejection. Fujita teaches all aspects of claim 10, but he does not mention 'data tree structure' specifically, however, Schwenke teaches a tree structured machine in an analogous prior art. In Schwenke, column 29, lines 1-8, "to uniquely identify the machine, the editor 162a initially provides a floating name box 154 prompting the user to enter a machine name. The machine name is used by the editor 162a to identify the correct machine module for a given industrial process. In the example above, the process is named 'AB1' and therefore, the machine module name is AB1 and AB1 is eventually placed at the top of the **tree**

	representation in tree section (see FIG. 17)."; see FIG. 7A, a machine model in a tree structure is represented. Also in claim 3, "The language extension set of claim 2 wherein the second extension set also includes a symbolic expression language for **referencing data items**, the symbolic expression language for navigating said **hierarchical machine tree**". It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Fujita's disclosure of the control program for machining a workpiece by using a tree structured data taught by Schwenke, for the purpose to identify the interrelationships of a machine and control configuration (Schwenke, column 5, lines 17-19).
11. A method as defined claim 10, wherein the data tree structure has the form of a hierarchical data tree structure.	For the feature of claim 9 see claim 9 rejection. For the rest if claim 11 feature see claim 10 rejection.
12. A method as defined in claim 1, wherein for each virtual operating unit the machining operations realizable therewith are ascertained automatically by the data processing unit.	See claim 1 rejection.
18. A method as defined in claim 12, wherein the sets of control data for the control program are ascertained automatically by the data processing unit on the basis of the addressed, virtual operating unit and the virtual machining operation correspondingly selected.	For the feature of claim 12 see claim 12 rejection. For the rest of claim 18 feature see claim 1 rejection.
19. A method as defined in claim 1, wherein the change in shape of a virtual workpiece due to machining thereof is represented by means of virtual actions of	For the feature of claim 1 see claim 1 rejection. Fujita column 1, lines 35-37, "where the workpiece configuration change (or the workpiece **cutting process**) is to be

the virtual operating units.	checked" (*change in shape).*
20. A method as defined in claim 19, wherein the change in shape of the virtual workpiece is ascertained by way of a cut calculation.	See claim 19 rejection.
21. A method as defined in claim 9, wherein the sets of control data of the control program are decoded and interpolated by the data processing unit in the same way as in the decoder and an interpolator of the machine control for the operating units of the machine tool.	For the feature of claim 9 see claim 9 rejection. In Fujita's disclosure, the input control data would have to be **processed** (*including decoded and interpolated*) the same way as in the machine control for the operating units so the data can be used in machining the workpiece.
22. A method as defined in claim 21, wherein the virtual actions of the virtual operating units are ascertained and represented during the interpolation using the machine and control configuration.	For the feature of claim 21 see claim 21 rejection. For the rest of the claim 22 feature see claim 1 and 21 rejections.
23. A method as defined in claim 22, wherein the machine model is used during the interpolation for ascertaining the virtual actions.	For the feature of claim 22 see claim 22 rejection. For the rest of the claim 23 feature see claim 1 and 21 rejections.
24. A method as defined in claim 19, wherein the machining of virtual workpiece is represented at any time on said virtual workpiece.	For the feature of claim 19 see claim 19 rejection. For the rest of the claim 24 feature see claim 1 and 21 rejections.
25. A method as defined claim 1, wherein the virtual actions of virtual operating units are visualized in machining sequence provided for a machining of the virtual workpiece or in a reverse machining sequence.	For the feature of claim 1 see claim 1 rejection. Fujita teaches all aspects of claim 25, but he does not mention 'a reverse machining sequence' specifically, however, Schwenke teaches it in an analogous prior art. In Schwenke's column 27, lines 7-10, "Normal functions can be performed either in **forward** or **reverse directions** without damaging a workpiece or an associated machine's components."

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Fujita's disclosure of the control program for machining a workpiece by using a revere machining sequence taught by Schwenke, for the purpose of performing the functions inverse function (Schwenke column 27, line 14).

26. A method as defined in claim 25, wherein in addition to the sets of control data, auxiliary data allowing a visualization of the virtual actions in a reverse machining sequence are generated for each set of control data taking into account the machine tool and control configuration.

For the feature of claim 25 see claim 25 rejection. Fujita teaches all aspects of claim 26, but he does not mention 'auxiliary data' specifically, however, Schwenke teaches it in an analogous prior art. In Schwenke, column 44, last pagraph, "After all required physical and operational characteristics of machine components are completely defined (*auxiliary data*) using the editors described above, the user would instruct the programming terminal to compile the entire template tree." -- it's obvious to a person of ordinary skill in the art to store the data in a '**chained**' format.

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Fujita's disclosure of the control program for machining a workpiece and displaying multiple virtual operating units taught by Iriguchi, by using a auxiliary taught by Schwenke, for the purpose of mapping procedures with their data (Schwenke, columns 44- 45).

27. A method as defined in claim 26, wherein the auxiliary data are allocated to each set of control data in the form of a set of auxiliary data.

For the feature of claim 26 see claim 26 rejection. For the rest of claim 27 feature see claim 1 and 26 rejections.

28. A method as defined in claim 27,

For the feature of claim 27 see claim 27

wherein the sets of auxiliary data are stored a chained set.

rejection. For the rest of claim 28 feature see claims 1 and 26 rejections.

29. A method as defined in claim 27, wherein the set of auxiliary data comprises a set transition and/or status data.

For the feature of claim 27 see claim 27 rejection. Fujita teaches all aspects of claim 28, but he does not mention 'status data' specifically, however, Schwenke teaches it in an analogous prior art. See Schwenke column 1, lines 25-29, "a stored program is executed to examine the condition of specific sensing devices on the controlled equipment, and to energize or de-energize selected operating devices on that equipment contingent upon the **status** of one or more of the examined sensing devices." And Schwenke, column 11, lines 3-17, "The processor module 64 executes a **control program** defined by the user which samples input signals received via the input module 66 along input bus 68 and based upon the **status** of those inputs, activates or deactivates appropriate output lines of output bus 70 connected to the output module 65."

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Fujita's disclosure of the control program for machining a workpiece and displaying multiple virtual operating units taught by Iriguchi, by using a status data taught by Schwenke, for the purpose of showing program status (Schwenke column 11, lines 13-17).

30. A method as defined in claim 1, wherein shape data of the virtual workpiece are ascertained for each set of control data.

For the feature of claim 1 see claim 1 rejection. For the 'shape data' feature see Fujita Figure 5, an **image** display (*shape is displayed, therefore there must be shape data ascertained for each set of control data)*.

31. A method as defined in claim 30, wherein the shape data are stored in the set of auxiliary data.	For the feature of claim 30 see claim 30 rejection. For the rest of claim 31 feature see claim 26 rejection.
32. A method as defined in claim 28, wherein not only the control program but also the chained list is accessed and the corresponding set of auxiliary data are read from the chained list for each set of control data.	For the feature of claim 28 see claim 28 rejection. For the rest of claim 32 feature see claim 26 rejection.
33. A method as defined in claim 32, wherein not only the set of control data to be processed but also the associated of auxiliary data are determined same time the data processing unit.	For the feature of claim 32 see claim 32 rejection. For the rest of claim 33 feature see claim 26 rejection.
34. A method as defined in claim 28, wherein the chained list stored and a set of auxiliary data is clearly allocated to each set of control data.	For the feature of claim 28 see claim 28 rejection. For the rest of claim 34 feature see claim 26 rejection.
35. A method as defined in claim 26, wherein sets of control data and auxiliary data are recorded with the data processing unit in machining sequence or reverse machining sequence and represented by the virtual operating units and virtual actions.	For the feature of claim 26 see claim 26 rejection. For the rest of claim 35 feature see claim 25 and claim 26 rejections.
36. A programming system for generating a control program provide machining of a workpiece by means of operating units of a machine tool, comprising: a. a data input unit for entering and/or changing information determining the control program the machine tool, b. a visualization device for representing said information, and c. a data processing unit adapted to convert information into sets of control	See Claim 1 rejection. Fujita's disclosure is also a 'programming system' machining of a workpiece.

data determining the control program and storing these program memory, wherein:

i. the data processing unit comprises a model visualization unit designed such that with at least two virtual operating units of the machine tool and virtual actions of the virtual operating units are representable by means of said visualization device, each of said virtual operating units corresponding to an operating unit of said machine tool,

ii. the model visualization unit interacting with the data input unit such that at least one of said virtual operating units is addressable via the data input unit and virtual actions are specifiable to said at least one virtual operating unit and representable by means of said visualization device, <u>and visualizing said at least two virtual operating units and said specified virtual actions) of said at least one virtual operating unit on said machine display</u>, and

iii. the model visualization unit the virtual actions specified to the at least one virtual operating unit are convertible into the sets of control data of the control program taking into account a machine configuration and control configuration.

37. A programming system as defined in claim 36, wherein with the model visualization unit, all of the virtual operating units of the machine tool are representable on the visualization device in the form of a machine display, in accordance actual machine configuration.	For the feature of claim 36 see claim 36 rejection. For the rest of claim 37 feature see claim 1 and claim 2 rejections.
38. A programming system as defined in claim 36, wherein the model visualization unit represents the virtual operating units and their virtual actions on the visualization	For the feature of claim 36 see claim 36 rejection. For the rest of claim 38 feature see claim 1 and claim 2 rejections.

device taking into account machine and control configuration of the machine tool.	
39. A programming system as defined in claim 36, wherein the model visualization unit represents the virtual operating units and their virtual actions on the visualization device after they have been addressed and specified.	For the feature of claim 36 see claim 36 rejection. For the rest of claim 39 feature see claim 1 and claim 2 rejections.
40. A programming system as defined in claim 36, wherein a linking of virtual operating units specified in a defined manner takes place by means a model configuration unit interacting with the model visualization unit, in order to take into account the machine and control configuration.	For the feature of claim 36 see claim 36 rejection. For the rest of claim 40 feature see claim 1, claim 2, and claim 5 rejections.
41. A programming system as defined in claim 36, wherein the machine and control configuration is taken into account with the aid of a machine model generated by the model visualization unit, said machine model comprising information concerning linkings of the virtual operating units representing the machine and control configuration.	For the feature of claim 36 see claim 36 rejection. For the rest of claim 41 feature see claim 1, claim 2 and claim 5 rejections.
43. A programming system as defined in claim 41, wherein the machine model is generatable by means of linking information from a model configuration unit.	For the feature of claim 41 see claim 41 rejection. For the rest of claim 43 feature see claim 1, and claim 5 rejections.
44. A programming system as defined in claim 41, wherein the data processing unit has a main memory for storage of the machine model linking the individual, virtual operating units of the machine tool in accordance with the machine and control	For the feature of claim 41 see claim 41 rejection. For the rest of claim 44 feature see claim 1, and claim 5 rejections.

configuration.

45. A programming system as defined in claim 41, wherein the machine model is available to the data processing unit in the form of a data tree structure.	For the feature of claim 41 see claim 41 rejection. For the rest of claim 45 feature see claim 10.
46. A programming system as defined in claim 45, wherein the data tree structure has the form of a hierarchical data tree structure.	For the feature of claim 45 see claim 45 rejection. For the rest of claim 46 feature see claim 10.
47. A programming system as defined in claim 36, wherein a function allocation unit is allocated to the model visualization unit, the machining operation realizable with each virtual operating unit being ascertainable for each operating unit with said function allocation unit.	For the feature of claim 36 see claim 36 rejection. For the rest of claim 47 feature see claim 1 and claim 2 rejections.
52. A programming system as defined in claim 51, wherein the function allocation unit presents the list with the machining operations allocated to the respective virtual operating units via the model visualization unit so as to be selectable for a user.	For the feature of claim 51 see claim 51 rejection. For the rest of claim 52 feature see claims 1 and 2 rejections (*function allocation is done via soft key selections in Fujita's disclosure*).
53. A programming system as defined in claim 47, wherein the model visualization unit automatically ascertains the sets of control data for the control program on the basis of the addressed operating unit and the virtual machining operation selected accordingly.	For the feature of claim 47 see claim 47 rejection. For the rest of claim 53 feature see claim 18 rejection.
54. A programming system as defined claim 36, wherein the model visualization unit represents the change in shape of a virtual workpiece by way of machining thereof by means of virtual actions the	For the feature of claim 36 see claim 36 rejection. For the rest of claim 54 feature see claim 19 rejection.

virtual operating units.

55. A programming system as defined in claim 54, wherein the change in shape of the virtual workpiece ascertainable by way of a cut calculation unit.	For the feature of claim 54 see claim 54 rejection. For the rest of claim 55 feature see claim 20 rejection.
56. A programming system as defined in claim 36, wherein the model visualization unit has a decoder and an interpolator for the sets of control data of the control program corresponding a decoder and an interpolator of the machine control for the operating unit of the machine tool.	For the feature of claim 36 see claim 36 rejection. For the rest of claim 56 feature see claim 21 rejection.
57. A programming system as defined in 56, wherein the interpolator ascertains the virtual actions of the virtual operating units using the machine and control configuration and the model visualization unit represents these on the visualization device.	For the feature of claim 56 see claim 56 rejection. For the rest of claim 57 feature see claim 1, claim 2, and claim 22 rejections.
58. A programming system as defined in claim 57, wherein the interpolator is used to ascertain the virtual actions of the machine model.	For the feature of claim 56 see claim 56 rejection. For the rest of claim 57 feature see claim 1, claim 2, and claim 23 rejections.
59. A programming system as defined in claim 54, wherein the model visualization unit is designed such that machining of the virtual workpiece is representable at any time on said virtual workpiece.	For the feature of claim 54 see claim 54 rejection. For the rest of claim 59 feature see claim 1, claim 2, and claim 24 rejections.
60. A programming system as defined claim 36, wherein the virtual actions of the virtual operating units are visualizable in a machining sequence provided for a machining of the virtual workpiece or in a reverse machining sequence.	For the feature of claim 36 see claim 36 rejection. For the rest of claim 60 feature see claim 25.

61. A programming system as defined claim 60, wherein in addition to generating said sets of control data, the model visualization unit generates auxiliary data for each set of control data taking into account the machine tool and control configuration, said auxiliary data permitting a visualization of the virtual actions in a reverse machining sequence.	For the feature of claim 60 see claim 60 rejection. For the rest of claim 61 feature see claim 26.
62. A programming system as defined in claim 61, wherein the model visualization unit allocates the auxiliary data to each set of control data in the form of set of auxiliary data.	For the feature of claim 61 see claim 61 rejection. For the rest of claim 62 feature see claim 27.
63. A programming system as defined in claim 62, wherein the model visualization unit stores the sets of auxiliary data in a chained list.	For the feature of claim 62 see claim 62 rejection. For the rest of claim 63 feature see claim 28.
64. A programming system as defined in claim 62, wherein the set of auxiliary data comprises a set of transition and/or status data.	For the feature of claim 62 see claim 62 rejection. For the rest of claim 64 feature see claim 29.
65. A programming system as defined in claim 36, wherein the model visualization unit ascertains shape data of the virtual workpiece for each set of control data.	For the feature of claim 36 see claim 36 rejection. For the rest of claim 65 feature see claim 30 rejections.
66. A programming system as defined in claim 65, wherein the model visualization unit stores the shape data in the set of auxiliary data.	For the feature of claim 65 see claim 65 rejection. For the rest of claim 66 feature see claim 31.
67. A programming system as defined in claim 63, wherein the model visualization unit is designed such that it accesses not only the control program but also the chained list, and the corresponding set of	For the feature of claim 63 see claim 63 rejection. For the rest of claim 67 feature see claim 32.

auxiliary data is readable from the chained list for each set of control data.

68. A programming system as defined claim 67, wherein the model visualization unit determines by means of an indicator unit not only the set of control data to be processed, but also the associated set of auxiliary data.	For the feature of claim 63 see claim 63 rejection. For the rest of claim 68 feature see claim 33.
69. A programming system as defined claim 61, wherein the model visualization unit is designed such that with it sets of control data and auxiliary data are recordable in machining sequence in reverse machining sequence and are representable by way of the virtual operating units and virtual actions.	For the feature of claim 61 see claim 61 rejection. For the rest of claim 69 feature see claim 25.
70. A programming system as defined in claim 63, wherein the data processing unit has a system program memory storing the control program.	For the feature of claim 63 see claim 63 rejection. For the rest of claim 70 feature see claim 1 (see FIG. 1, *Fujita's system has system program memory*).
71. A programming system as defined in claim 70, wherein the chained list is stored in the system program memory and that a set of auxiliary data is clearly allocated to each set of control data.	For the feature of claim 70 see claim 70 rejection. For the rest of claim 71 feature see claim 34.

9. Claims 7 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,315,523 by Naoki Fujita et al. (hereinafter "Fujita"), in view of U. S. Patent No. 6,047,225 by Iriguchi et al. (hereinafter "Iriguchi"), in view of U.S. Patent No. 6,553,268 by Marvin J. Schwenke et al. (hereinafter "Schwenke"), and further in view of U.S. Patent No. 5,691,909 by Daniel D Frey et al. (hereinafter "Frey").

CLAIM	Fujita / Iriguchi / Schwenke / Frey
7. A method as defined in claim 6, wherein the machine model comprises a basic configuration of the virtual operating units of the machine tool extendible by the user.	For the feature of claim 6 see claim 6 rejection. Fujita and Schwenke teach all aspects of claim 7, but he does not mention 'basic configuration' specifically, however, Frey teaches it in an analogous prior art. In Frey's column 4, lines 62 through column 5, line 4, "The simulation is based on a **homogeneous transformation matrix (HTM) model** (*basic configuration*) of the machine. HTM models have been used for years in modeling machine tools. However, HTM models are typically used only to determine the accuracy of the location of the tool. The method of the present invention predicts accuracy in size, form, and profile of specific parts to be made on the machine tool. The essential feature to achieving the forgoing result is utilizing the tool's location, orientation, velocity, and shape to calculate a set of discrete points on the surface of a part." It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Fujita's disclosure of the control program for machining a workpiece and displaying multiple virtual operating units taught by Iriguchi, and Schwenke's disclosures by using a basic configuration taught by Frey, for the purpose of predicting results in machining a workpiece (Frey, column 4, line 67).
42. A programming system as defined in claim 41, wherein the machine model comprises a basic configuration of the virtual operating units of the machine tool extendible by the user.	For the feature of claim 41 see claim 41 rejection. For the rest of claim 42 feature see claim 7 rejection.

10. Claims 13-17, and 48-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,315,523 by Naoki Fujita et al. (hereinafter "Fujita"), in view of U. S. Patent No. 6,047,225 by Iriguchi et al. (hereinafter "Iriguchi"), in view of U.S. Patent No. 6,553,268 by Marvin J. Schwenke et al. (hereinafter "Schwenke"), and further in view of U.S. Patent No. 5,586,224 by Toshiyasu Kunii et al. (hereinafter "Kunii").

CLAIM	**Fujita / Iriguchi / Schwenke / Kunii**
13. A method as defined in claim 12, wherein a set of filter data is generated for ascertaining the realizable machining operation.	For the feature of claim 12 see claim 12 rejection. Fujita and Schwenke teach all aspects of claim 13, but he does not mention 'filter data' specifically, however, Kunii teaches it in an analogous prior art. In Kunii column 7, lines 4-5, "**Data defining the model** is stored in the computer on a database." And Kunii column 8, lines 6-10, "The data constituting the control graphs are determined from the motions of the model obtained after applying actual motions to the model and **analyzing** (*filter data*) the results, and are stored in the database." Further, column 8, lines 18-20, "On the basis of the **data** input into the database, and particularly the control graphs showing all of the forces on each joint over time as the **model** goes through a particular motion or activity (*realizable machining operation*), it is possible to design new motions (the seventh step of the flow chart). Thus, the movement of a robot may be programmed or a numerical **control program** for working a **machine tool** may be created starting with the information which is already available in the database. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to supplement Fujita, Iriguchi, and Schwenke's disclosures of the

	control program for machining a workpiece by using a filter data taught by Kunii, for the purpose of fast accessing data.
14. A method as defined in claim 13, wherein the set of filter data is generated on the basis of the machine and control configuration.	See claim 13 rejection.
15. A method as defined claim 13, wherein the set of filter data is ascertained independently by the data processing unit in accordance with the machine and control configuration.	See claim 13 rejection.
16. A method as defined in claim 13, wherein a list of machining operations performable with the respective virtual operating unit is selected from a list of all the possible machining operations with the set of filter data.	See claims 1 and 13 rejections.
17. A method as defined in claim 16, wherein the list with the machining operations allocated to the respective virtual operating unit is presented so as to be selectable for a user.	See claims 1, 2, and 16 rejections.
48. A programming system as defined in claim 47, wherein a set of filter data is generatable ascertaining realizable machining operation.	For the feature of claim 47 see claim 47 rejection. For the rest of claim 48 feature see claim 1, and claim 5 rejections.
49. A programming system as defined in claim 48, wherein the set of filter data is generatable on the basis of the machine and control configuration.	For the feature of claim 48 see claim 48 rejection. For the rest of claim 49 feature see claim 13 rejection.
50. A programming system as defined in claim 48, wherein model configuration generates the set of filter data in accordance	For the feature of claim 48 see claim 48 rejection. For the rest of claim 50 feature see claim 13 rejection.

with the machine and control configuration and transmits this set of filter data to the function allocation unit.

51. A programming system as defined in claim 48, wherein the set of filter data, the function allocation unit selects from a list of all possible machining operations a list of machining operations performable with the respective virtual operating units.

For the feature of claim 48 see claim 48 rejection. For the rest of claim 51 feature see claim 13 rejection.

Conclusion

The following summarizes the status of the claims:

35 USC § 103 rejection: Claims 1-71

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Ching Chow whose telephone number is 571-272-3693. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Zhen can be reached on 571-272-3708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature of relating to the status of this application should be directed to the **TC2100 Group receptionist: 571-272-2100**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chih-Ching Chow
Examiner

Art Unit 2191
April 25, 2006

cc

WEI ZHEN
SUPERVISORY PATENT EXAMINER